

possible in climatic conditions, nor has the purely scientific aspect of the question been neglected, for simultaneously with the document to which we have already referred, the New Zealand Government has just issued a detailed "Report on a Botanical Survey of Kapiti Island," by Dr. L. Cockayne, a botanist who is already widely known for his researches on the New Zealand flora. This exhaustive and painstaking piece of work deals with the physical geography and climate of the island, and with the introduced plants and animals, as well as with the indigenous flora. The latter is treated under the headings of the various plant-formations—classified as forest, shrub, coastal, meadow, and rock-formations—and much attention is devoted to ecological problems. The suitability of the island as a plant and animal sanctuary is discussed, and lists are given of the native and introduced plants. This report, again, is illustrated by numerous excellent photographs taken by the author.

The interesting monograph which we have thus briefly summarised is a good example of the activity and enthusiasm with which the representatives of natural science in New Zealand are carrying on the good work initiated by such pioneers as von Haast, Hutton, Hector, Kirk, Buller, and Parker, to mention only some among those who have already passed away from the scene of their labours.

ARTHUR DENDY.

LIEUT.-COL. R. L. J. ELLERY, C.M.G., F.R.S.

LIEUT.-COL. R. L. J. ELLERY, whose death we announced on January 16, was for many years the director of the Williamstown and Melbourne Observatories. To review his career is to recall the history of astronomy in Australia, so intimately was he connected with its progress. When he took up work as Government Astronomer in a rising colony, the instruments at his disposal were small, and the funds available for promoting astronomical research necessarily limited. The extension witnessed in the last forty years is due in no small measure to his initiative, and not the least of his services was to induce the colony to recognise the claims of science and to make more liberal provision for its needs. By his efforts arose the new observatory at Melbourne, and by his activity it became the centre for the prosecution of much useful work. There, too, at his instigation was mounted the four-foot reflector, at the time of its erection the most powerful instrument in the southern hemisphere. This instrument was much used for the examination of Herschel's nebulae, but in a new society, intent upon material progress, such a telescope was perhaps of even greater use by the interest it aroused in science generally. It served as a permanent reminder of the progress of science, and of the necessity of meeting its demands. For as the colonies enlarged, the claims of science required increasing support. In climatology, Col. Ellery's powers of organisation were invaluable. Not only did he collect the necessary information which indicated the more valuable localities for settlement, but gradually issued isobaric charts and storm warnings, at first applicable to the coast, but afterwards, as other colonies joined in an uniform scheme, published daily weather charts extending over the whole continent. Terrestrial magnetism was another subject he pursued with great eagerness, and geodesy, including pendulum experiments and longitude determinations, also claimed the attention of the staff. In a word, the observatory was the centre of enterprise and activity, encouraging the scientific spirit in many directions.

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Forty years ago, the condition of meridional astronomy in the southern hemisphere was in a backward condition, and naturally much attention had to be paid to the determination of star places. Two standard star catalogues were issued from the Melbourne Observatory under Col. Ellery's direction, and, in addition to this special work, zone observations on a large scale were carried out. Taking part in the work of the International Star Chart has increased the meridian measures very considerably, since the observatory has loyally assisted others in providing the positions of guiding stars, where required, and for the final reduction of the measures on the photographic plates. Both in 1874 and 1882, Australia furnished a number of stations for the observation of the transit of Venus, and particularly on the former occasion the late director was instrumental in providing suitable equipment, and assisted the general programme very materially.

Col. Ellery retired from the office of director in 1895. Some portion of his leisure he devoted to the preparation of a history of the beginnings and growth of astronomy in Australia, and in various ways he was prominent in promoting scientific interests. He was elected a Fellow of the Royal Society in 1873, was a Fellow of the Royal Astronomical Society, and of many colonial societies for the promotion of scientific aims.

NOTES.

IN the Henry Sidgwick memorial lecture at Newnham College, Cambridge, on January 25, Mr. Balfour spoke on decadence, and remarked that progress is with the West and with the communities of the European type. "If our energy of development," he is reported to have said, "were some day exhausted, who can believe that there remains any external source from which it can be renewed? Where are the untried races competent to construct out of the ruined fragments of our civilisation a new and better habitation for the spirit of man?" He answered his own questions with the assertion that such nations do not exist. But Japan has been steadily assimilating what is most important in European civilisation for some years now, and her system of education is every year approaching in efficiency anything the West has to show. In the contingency of which Mr. Balfour spoke, it is easily conceivable that a people with a genius for development, such as Japan has shown, may take naturally the place of superiority and develop a system which is a distinct advance on any civilisation the world has yet known. Men of science will be pleased with Mr. Balfour's tribute, in the latter part of his lecture, to the achievements effected by science and to the extent science has assisted human development, but they will at the same time remember that the Government of which Mr. Balfour was the leader assisted scientific work no more than other Governments. Statesmen are eloquent in praising scientific work and methods, but few of them have sufficient courage of their expressed convictions to make adequate provision for the extension of natural knowledge which is the life-blood of the modern State.

We regret to see the announcement of the death of Sir Thomas McCall Anderson, regius professor of medicine in the University of Glasgow since 1900.

MR. MORRIS K. JESUP, who died last week, bequeathed 200,000*l.* to the American Museum of Natural History for its collections. Mr. Jesup was president of the museum for twenty-five years; his name is familiar to anthropologists, and naturalists generally, as that of one who

gave generous assistance to various expeditions and other scientific enterprises.

LORD AVEBURY has been elected president of the Royal Microscopical Society, and will deliver an address on seeds, with especial reference to British plants, at the March meeting of the society.

We learn from the *British Medical Journal* that the Secretary of State for the Colonies has appointed Dr. W. J. Simpson, professor of hygiene at King's College, London, to proceed to the Gold Coast to assist in combating the present outbreak of bubonic plague at Accra. Prof. Simpson left for the Gold Coast on January 18.

To the *Times* of January 22 Miss L. L. Velej contributes a letter on the subject of luminous barn-owls, in which it is suggested that the emanation is due to the feathers of the birds having come in contact with luminiferous decaying wood in their roosting-places. This suggestion, which has doubtless occurred to many naturalists, affords a probable and satisfactory explanation of the phenomenon.

THE Philosophical Society of Washington held its 643rd meeting at the Hubbard Memorial Hall, in the City of Washington, on January 18, the entire evening being devoted to commemorative addresses of the life and work of Lord Kelvin. Prof. A. G. Webster spoke of Kelvin's life and work, Prof. R. S. Woodward confined his address to Kelvin's contributions to geophysics, and Prof. Simon Newcomb devoted his remarks to Kelvin's character and personality, to which topic the British Ambassador also contributed some reminiscences. The president of the society, Dr. L. A. Bauer, presided.

DR. G. A. DORSEY, curator of anthropology in the Field Museum of Natural History, Chicago, has recently visited Cambridge before embarking on a protracted tour through the East Indian Archipelago, Australia, and Melanesia. After visiting the Philippines, where three of his students are engaged in ethnological researches, he will return to Chicago by way of China, Japan, and the Hawaiian Islands. He expects to be away from Chicago for about one year. This is merely a tour of inspection, but it may not unreasonably be expected that it will lead to future investigations by others in certain localities.

IN the Rev. Dr. Lorimer Fison, who died near Melbourne on December 29, 1907, Australian anthropology has lost one of its earliest scientific workers. He was born in England on November 9, 1832, and went up to Caius College, Cambridge, but never took a degree; after residing some time in Australia he became a Wesleyan missionary and went to Fiji, and it was from him that Lewis Morgan drew important information for his "Systems of Consanguinity." Returning to Australia, Dr. Fison met Dr. A. W. Howitt, and a joint work on Australian marriage customs, &c., "Kamibaroi and Kurnai," appeared in 1880. Whatever his views at that date, Dr. Fison subsequently dissented from Morgan's interpretation of the facts in favour of primitive promiscuity, for in an address to the Australasian Association for the Advancement of Science he took the view that the group marriage did not mean more than marital right or qualification by birth. Dr. Fison, unfortunately, found little time for writing; papers by him on Fijian customs and kinship systems appeared in the *Journal of the Anthropological Institute*; he dealt with Fijian land tenure in the *Expository Times* of 1905, and a year earlier he published in "Tales of Old Fiji" a small part of his

great store of knowledge of that island. Some years ago he received a Civil List pension, but, to the loss of anthropology, broken health forbade him to do much literary work.

IN the *Engineer* and in *Engineering* of January 24 a large amount of space is devoted to the Board of Trade inquiry into the facts relating to a disastrous explosion of a thermal storage-drum in connection with a Babcock and Wilcox boiler at Greenwich. The explosion took place on December 20, 1906, and the inquiry (one of the longest on record) ended on January 22, 1908, when judgment was given by the commissioners. The finding was that the primary cause of the explosion was a crack which had been formed in the end plate, owing to the bad treatment to which the plate had been subjected while being fitted into the drum. Any fears that existed as to the peculiar liability of thermal storage-drums to fail were removed. Many points of scientific interest occurred during the inquiry, notably in the reports by Mr. W. Rosenhain and Dr. T. E. Stanton, of the National Physical Laboratory, showing from the results of chemical, microscopical, and mechanical tests that the plate in question was of good normal commercial quality, but that it had received severe treatment in the hands of the boiler-makers.

LAST spring Dr. J. Elberts, the German geologist, conducted an expedition to investigate further the fossiliferous deposits of the Bengawan River, near Trinil, in Java, rendered famous by the discovery of *Pithecanthropus erectus* by Dr. Eugene Dubois in 1891-2. Although extensive collections were made and fresh forms discovered, no trace of *Pithecanthropus* was found; but, according to the correspondent of the *Pall Mall Gazette* (January 17), Dr. Elberts found roughly fashioned implements of bone, "a fireplace, and the remains of extinct animals, from which he became convinced that the ape-man must have existed at a remoter period." Unfortunately, this statement is so vague that nothing can be accepted until more information comes to hand. The implication is that some beings made fires and cooked animals, now extinct, before the gravel beds were deposited which contain *Pithecanthropus* and other extinct forms. In the province of Madiun a fireplace was discovered 20 feet below the surface containing stone arrow-heads and fragments of pottery, broken and partly burned bones, and charred teeth of a fossil buffalo, together with the bones of deer, pigs, and a fossil elephant (*Stegodon*); some of these bones had been split open in order to extract the marrow. Dr. Elberts computes that these people lived 20,000 years ago, but, as the correspondent of the *Pall Mall Gazette* does not give the data upon which this estimation is based, this date must await the publication of all the facts. It is evident that we may congratulate our German colleagues on having discovered remains of early inhabitants of Java who were apparently in their "Neolithic" stage of culture. It is to be hoped that when the finds are published in full it will be possible to learn what manner of men they were. We understand that the expedition is now in south Sumatra, where fossil plants will also be collected, in the hope of determining whether Sumatra had an Ice age.

THE correspondence on the winding of rivers in plains which followed the letter from Sir Oliver Lodge published in these columns on November 7 last (vol. lxxvii., p. 24), and to which Mr. J. Lomas contributed on December 5 (vol. lxxvii., p. 102), has led Dr. D. T. Smith, of Louisville, Ky., to remind us that the subject is discussed in a book of his entitled "Philosophy of Memory," which was reviewed in *NATURE* of May 18, 1899 (vol. lx., p. 51).

In his book a chapter on the laws of river flow is included, in which he expresses the opinions supported by Mr. Lomas. Dr. Smith's views were arrived at after many years of close observation of streams, ranging from rivulets to the Mississippi, on the banks of which he resides. As was said in the review of his book, his results merit careful consideration as an important contribution to the inquiry.

MR. R. I. LYNCH writes commenting on the review of "The Garden Beautiful" which was published (p. 217) in our issue of January 9. He takes exception to the remark:—"We cannot agree with the suggestion on p. 76 that trees growing in isolated positions on lawns have their roots robbed by the grasses! in anything like the measure that obtains when the trees are growing together in a plantation." Mr. Lynch reminds us of the experiments carried out at the Woburn Experimental Fruit Farm, and of the serious results that were found to follow when grass grows over the roots of a young tree. These experiments were personally inspected by our reviewer, who wrote with full knowledge of the results obtained. Mr. Lynch appears rather to have misunderstood the meaning of the sentence in the review. It was not intended to deny the deterring influence of the sward; the statement is that a tree growing on a lawn suffers less robbery at the roots from grasses than is suffered by a tree growing in a plantation, and therefore exposed to the competition caused by the encroachment of roots from adjacent trees, which in course of time must interlace. The question raised is, in fact, one of degree, and degree only.

IN the course of an article on the "Atlantic flora" of Scandinavia in *Naturen* for January, Mr. E. Jörgensen gives a figure, taken from a living specimen of the Lofoten variety of the fjord-horse, which affords a much better idea of this pony than does the one from a badly mounted skin in the Bergen Museum published last year by Dr. Stejneger in *Smithsonian Miscellaneous Collections*.

To the January number of the *Journal of Anatomy and Physiology* Dr. D. Forsyth contributes the first part of an important paper on the anatomy of the thyroid and parathyroid glands in mammals and birds, embodying the results of the examination of these organs in a large number of species. Since the conclusions are reserved for the continuation, a fuller notice of the paper may likewise be deferred. In the same issue Dr. W. L. H. Duckworth continues his account of the brain of native Australians, while Dr. Ramsay publishes additional observations on the dentition of the same race.

BULLETIN No. 56 of the University of Arizona Experiment Station is devoted to scale-insects infesting palms and the best means of exterminating these pests. One of the most troublesome, which much resembles the jujube-scale (*Parlatoria zizyphi*) commonly infesting oranges from the Mediterranean countries, and appears to belong to the same genus, was introduced on palms from North Africa. Unfortunately, it has been described independently by three different naturalists, in Italy, America, and New Zealand, under as many distinct names, of which *Parlatoria blanchardi* is entitled to stand.

To Dr. W. L. Abbott, who has previously done such good service to America by collecting in the Malay countries, the U.S. National Museum is indebted for a series of specimens of mammals from western Borneo, a notice of which is given by Mr. M. W. Lyon in No. 1577 of the *Proceedings* of that institution. The collection is

noteworthy for the large number of skins of the proboscis-monkey. The animal referred to under the disguise of *Pongo pygmaeus pygmaeus* appears to be the orang-utan. Other recent issues of the same publication include an account of the North American parasitic copepod crustaceans of the family Caligidae (No. 1573), by Mr. C. B. Wilson, and a list of the land-shells of the family Pyramidellidae, with descriptions of new species, from the Oregon district (No. 1574), by Messrs. Dall and Bartsch.

A NOTABLE contribution to the botany of Texas is published in the eighteenth annual report of the Missouri Botanical Garden under the title of "Plantæ Lindheimerianæ, Part iii." Mr. F. Lindheimer was one of the early German pioneers in Texas, and from 1833 to 1851 made botanical collections that were to be named by Dr. G. Engelmann, of St. Louis, and Dr. Gray, and distributed among subscribers. Four fascicles were collected and distributed, and in the first two parts of "Plantæ Lindheimerianæ" determinations were given for the orders as far as Compositæ (Bentham-Hooker's sequence). The present part, prepared by Mr. J. W. Blankinship, contains a biography, the determinations for the remainders of the early fascicles, and for another series that may be regarded as fascicle v. Also the author has compiled a revised index of names for all the collections.

FERTILISATION in the genus *Cypripedium* forms the subject of a paper by Miss L. Pace published in the *Botanical Gazette* (November, 1907). The species *spectabile* and *parviflora* were examined, and the development of the embryo sac furnished results of peculiar interest. The original mother cell divides to form two daughter cells, one micropylar, the other chalazal. The nucleus of the micropylar cell rarely divides, but the nucleus of the chalazal cells divides, giving rise to two nuclei, so that three megaspore nuclei are usually produced. The chalazal cell becomes the embryo sac, in which two megaspore nuclei are used; another nuclear division completes development in the embryo sac, that contains then one egg cell, two synergids, and a polar nucleus. Fertilisation of the ovum is normal, and so-called double fertilisation is effected by the fusion of one synergid, the polar nucleus, and a male nucleus.

BOTANISTS, more especially those who favour the view that the derivation of the angiosperms should be traced through the gymnosperms, will be much interested in the theory with regard to the embryo sac advanced by Dr. O. Porsch in a small brochure published at Jena by Mr. Gustav Fischer. The original and essential points in the argument lie in the interpretation of the antipodal cells as an archegonial complex, and in homologising the polar nuclei with ventral canal cells. This postulates an archegonium consisting of an ovum and two neck cells, and a vestigial ventral canal cell nucleus at each end of the embryo sac. Dr. Porsch bases his arguments on a sequence starting from the condition of numerous archegonia found in *Sequoia* through types of the Cupressaceæ and Ephedra, where the archegonia are reduced in number and complexity, to a hypothetical case of two archegonia, at first juxtaposed, but subsequently located at the poles of the embryo sac.

IN the latest addition (No. 15) to the series of Bulletins issued by the University of Illinois, Mr. L. P. Breckenridge discusses the burning of Illinois coal without smoke. The fundamental principles that apply to smokeless furnace construction and working are enumerated, and, by means of units in actual operation, several ways are indicated in which these principles have been satisfactorily applied.

THE report of the Chief Inspector of Mines for the year 1904-5, issued by the Mysore Geological Department (Madras, 1907), has just been received. It contains the mineral statistics for 1904, and, as regards gold mining, is a record of steady progress. The value of the gold production in 1904 was 2,323,194*l*. The total value of gold produced from the commencement of mining operations up to the end of 1904 was 21,011,075*l*, and the total dividends paid amounted to 9,329,487*l*. In addition to gold, statistics are given of the production of salt, iron ore, corundum, soapstone, limestone, clays, laterite, granite, and other building stones.

IN a review of engineering in the United States last year, reference is made, in the *Engineer* of January 17, to the spectacular feature of building as an engineering work in the construction of the numerous steel-frame office buildings of enormous height in New York. The highest of these is the tower of the Manhattan Building, 75 feet by 85 feet, 660 feet high to the top of the cupola. This has forty-eight stories. Next to this is the tower of the Singer Building, forty-two stories, with a height of 612 feet. The main portions of these buildings are respectively eleven and fourteen stories high. On the other hand, the City Investing Company Building has the main building, twenty-five stories high, with a tower 70 feet square, having thirty-two stories, and rising to a height of 400 feet above the street. In all these cases the towers are used as offices, &c., like the main parts of the building. This requires very elaborate lift equipment, with high speeds. The city now has one building each of forty-eight, forty-two, and thirty-two stories; twenty buildings of twenty to twenty-six stories; fifty of fifteen to twenty stories; and 465 buildings of ten to fifteen stories in height.

WE have received from Dr. Eredia, of the Italian Central Meteorological Office, an article on the rainfall of the Ligurian Riviera, reprinted from the *Rivista Agraria* for October, 1907. This paper, like his other useful investigations of the meteorology of various Italian provinces, collects into convenient tables the most trustworthy data relating to the object in view, and discusses them in an interesting explanatory text, dealing with monthly and seasonal values. The latter clearly show that in all seasons of the year the rainfall along the eastern Riviera is greater than along the western, and that autumn is the wettest and summer the driest period. Next to the autumn season, winter is wettest at Genoa, Spezzia, and San Remo, *i.e.* near the centre and extremes of the province, but at other places the greatest fall occurs in the spring. The mean yearly values are 52.8 inches at Genoa, 57.7 inches at Spezzia, and 31.9 inches at San Remo; the period dealt with is 1880-1905.

THE Cantor lectures, delivered by Mr. Conrad Beck in November and December last, have been reprinted in recent numbers of the *Journal of the Society of Arts* (December 27, 1907, to January 17); they deal with the theory of the microscope, a subject of never-failing interest, whether it be considered from the theoretical or the practical standpoint. The first lecture deals with the problem of arranging lenses so as to obtain an enlarged view of an object; although most of the matter is well known, many points are considered in a most interesting and instructive manner, as, for instance, the interpretation of the Gauss surfaces for a thick lens or system of lenses. The second lecture is concerned with the quality of the image formed. The methods of correcting certain classes of lenses for spherical and chromatic aberration

may be found in most books on geometrical optics, but the microscope objective is so complicated in its structure, and the conditions to be complied with in its design are so far different from those which determine the design of other lenses, that but scanty notice is generally given to this most important and interesting lens combination. Mr. Beck outlines the principles which must guide the designer of such a lens combination. The third lecture is devoted to the consideration of diffraction, so far as this applies to the microscope. The theory due to the late Prof. Abbe is outlined, and Mr. J. W. Gordon's criticisms of the theory are then explained; an experiment shown by Mr. Beck in his lecture proves conclusively that the Abbe theory is at fault in certain respects. The fourth lecture, which is concerned with the practical use of the microscope, should prove of great value to those who wish to employ that instrument to its greatest advantage.

MESSRS. E. B. ROSA and L. COHEN examine critically the formulæ given by different authors for the self-inductance of a circle in the *Bulletin of the Bureau of Standards* for December, 1907. They consider Wien's formula the most accurate, Maxwell's and Rayleigh's next, Minchin's, Hicks's, and Blathy's untrustworthy, and the simple formula of Kirchhoff, *i.e.* $L = 4\pi a(\log 8a/r - 1.75)$, in which a is the radius of the circle and r the radius of its cross-section, as a very close approximation to the correct value.

THE *Journal de Physique* for December, 1907, contains Prof. Schuster's address to the Société française de Physique on some electrical phenomena of the atmosphere and their relations with solar activity. Prof. Schuster points out that the most important free periods of oscillation of the atmosphere of the earth are, according to the calculations of Lord Rayleigh and M. Margules, about twelve and twenty-three hours, and that in consequence the semi-diurnal motions are more pronounced than the diurnal. Assuming that the conductivity of the upper atmosphere is much greater than that of the lower, he shows that the electric currents produced in the atmosphere by its motion across the earth's magnetic field are capable of explaining the diurnal variations of terrestrial magnetism. The negative charges brought down by rain drops he considers account for the maintenance of the earth's negative charge. He points out that the evidence with regard to magnetic storms and sun-spots only establishes a general connection, and does not warrant us in attributing a particular storm to a particular spot. Finally, he urges the substitution of short organised attacks on definite problems for the present rather aimless accumulation of observations carried on for such long periods at so many places.

A COPY of the prospectus of Dr. J. W. Spengel's *Ergebnisse und Fortschritte der Zoologie* (see *NATURE*, January 16, p. 246), giving a sketch of the lines upon which that serial is to be conducted, and the names of the editors for special subjects, has been received from the publisher, Mr. Gustav Fischer, Jena.

GOOD pictures often serve to direct the attention of children to the beauties of nature and to encourage them to seek out the objects themselves in order to study them at first hand. A series of beautiful slides illustrating wild bird life, all of which have been made from photographs taken from nature, submitted to us for inspection by Messrs. Sanders and Crowhurst, should certainly succeed in attracting to the observation of birds in their natural surroundings those who are fortunate enough to see them.

MESSRS. MACMILLAN AND CO., LTD., have published a third edition of "Comparative Anatomy of Vertebrates," which has been adapted from the sixth German edition of Prof. R. Wiedersheim's work by Prof. W. N. Parker. The present edition has been almost entirely re-written, and with Prof. Wiedersheim's permission, alterations desirable in the interests of English students have been made. The general plan of the original has been retained, but some portions have been extended and others abridged. The second English edition was reviewed in the issue of NATURE of September 1, 1898 (vol. lviii., p. 409), when the characteristics of this widely known student's manual were described. The price of the new edition is 16s. net.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN FEBRUARY:—

- Feb. 4. 4h. 11m. Moon in conjunction with ♀ and 3° 48' S.
 5. 6h. 22m. to 11h. 12m. Transit of Jupiter's Satellite IV. (Callisto).
 „ 13h. 19m. to 17h. 1m. Transit of Jupiter's Satellite III. (Ganymede).
 10. 7h. 50m. Venus and Saturn in conjunction.
 11. 10h. 28m. Minimum of Algol (β Persei).
 „ 12h. 22m. to 13h. 19m. Moon occults ζ Tauri (Mag. 3).
 13. 2h. Mercury at greatest elongation (18° 9' E.).
 „ 11h. 45m. to 13h. 0m. Moon occults δ Geminorum (Mag. 3.6).
 14. 7h. 17m. Minimum of Algol (β Persei).
 15. 2h. 7m. Moon in conjunction with Jupiter and 1° 12' N.
 „ Illuminated portion of the disc of Venus = 0.797.
 27. 12h. 48m. Moon in conjunction with Uranus and 0° 7' N.

PHOTOGRAPHIC OBSERVATIONS OF ENCKE'S COMET (1908a).—Encke's comet was photographed at the Heidelberg Observatory on January 13, 14, 15, 18, and 19, and in No. 4229 of the *Astronomische Nachrichten* (p. 79, January 21) Prof. Wolf records the positions and magnitudes derived from the plates. On the first three dates the recorded magnitude was 12.0, on the last two 12.5. The observed positions have been compared with those given in the ephemeris, and corrections to the latter are appended; those for R.A. are fairly constant at +3m., but those for declination vary from -24'.0 (December 25, 1907) to +1'.4 (January 19).

SATURN, A NEW RING SUSPECTED.—Observing at an elevation of 1550 metres, at the Revard, Puy-de-Dôme, France, under exceptionally favourable conditions on September 5, 1907, M. G. Fournier suspected a faint, transparent, and luminous ring exterior to the principal rings of Saturn. On September 7 the same observer confirmed the presence of a very pale luminous zone sharply defined at its edges, but neither he nor M. Jarry-Desloges, who communicates the discovery to the *Bulletin de la Société astronomique de France* (p. 36, January), was able to find it on September 11. The latter observer suggests the possibility that the ring is subject to periodical fluctuations of brightness, and may, therefore, only become visible at certain intervals; he also suggests that observers situated in high altitudes, such as the Arequipa and Flagstaff stations, may, alone, be able to observe this difficult detail of the Saturnian appendage. A drawing accompanying the communication shows the nebulous ring, extending beyond the principal rings, as it appeared at 22h. 25m. on September 7.

DETERMINATION OF THE MOON'S LIGHT WITH A SELENIUM PHOTOMETER.—In a recent note in these columns (p. 258, January 16) reference was made to some results obtained by Messrs. Stebbins and Brown in a determination of the brightness of moonlight with a selenium photometer (*Astrophysical Journal*, vol. xxvi., p. 326). The result was given as 0.23 candle-power, but, as there seems to be some misconception as to the meaning of this, an explanation seems desirable. American observers state quantities

of this kind in candle-metres, and thus interpreting the above result it means that the light of the full moon illuminates a white surface to the same extent as an illuminating source of 0.23 candle-power, placed at a distance of 1 metre, would illuminate it.

Owing to the colour-sensitiveness of the selenium cells being as yet unknown, this result must be accepted as purely preliminary; different cells gave results varying from 0.07 to 0.37, the mean being 0.22 candle-power, and very near to the 0.23 adopted by Müller ("Die Photometrie der Gestirne," Leipzig, 1897, p. 344) as the mean of several visual observations by different observers.

The method of observation adopted by Messrs. Stebbins and Brown was to determine at what distance from the selenium cell the standard candle would produce the same deflection as the light from the moon, and then to reduce this distance to terms of the standard candle-metre, afterwards applying the corrections for atmospheric absorption. The determinations of the variation of moonlight with the moon's phase gave consistent results for each cell, and forms the most valuable part of the work. The standard candle employed is by Max Kohl, and burns amyl acetate; the diameter of the round wick is 8 mm., and the height of the flame was regulated to 40 mm.

A USEFUL SUN AND PLANET CHART.—From the firm of Carl Zeiss we have received a copy of their chart for showing the position of the sun, or of any of the planets, at any epoch during the present year. The chart is constructed on a principle employed by Mr. R. H. Bow, of Edinburgh, and consists of two sets of curves and a star map. On the one set of curves, which is placed to the right of the star map, the declinations of the various bodies during the twelve months are shown, whilst the second set, placed directly below the star map, shows the right ascensions. To find the position of a planet on any date, the declination of the planet on that date is found on the former set of curves, and from the point thus determined a horizontal line is drawn across the star map. A vertical line is then drawn from the corresponding point on the right-ascension curve, and where these two lines intersect on the star map is the position occupied by the planet. A calendar of oppositions, quadratures, and conjunctions is also shown on the chart.

CHICAGO MEETING OF THE AMERICAN ASSOCIATION.

THE fifty-eighth meeting of the American Association for the Advancement of Science and of its affiliated scientific societies was held at Chicago from December 30, 1907, to January 4, 1908, under the presidency of Prof. E. L. Nichols, professor of chemistry at Cornell University. The attendance was estimated at about 1400, the accurate registration of the affiliated societies having not been handed in at the time of writing. The programme was one of unusual interest, and a number of important measures were adopted.

The opening meeting of the association was held on the morning of Monday, December 30. Addresses of welcome were made by Dean G. E. Vincent, of the University of Chicago, in the enforced absence of the president, Dr. H. P. Judson, and by Mr. G. E. Adams, vice-chairman of the local committee for the meeting. The retiring president, Dr. W. H. Welch, of Johns Hopkins University, introduced the president of the meeting, Prof. Nichols, who replied to the addresses of welcome. The address of the retiring president, Dr. W. H. Welch, was given on December 30 before a large audience, and consisted of a masterly treatment of the subject of the interdependence of medicine and other sciences of nature (see NATURE, January 23). At the conclusion of the address a reception was given to the members of the association and affiliated societies.

The vice-presidential addresses, that is, addresses of presidents of sections, were distributed through the week at afternoon sessions. That before Section A (mathematics and astronomy) was delivered by the retiring vice-president, Edward Kasner, of Columbia University. Its title was "Geometry and Mechanics." The address of the retiring vice-president of Section B (physics) was given by Prof.